REMARKS/ARGUMENTS

With the present response, typographical error is corrected in both the specification and claims. A declaration drawn under 37 CFR § 1.132 is presented and a DVD disc showing the performance of apparatus assembled in the manner described in the principal reference as well as apparatus employing the method of the invention is proffered.

As a prelude to considering the rejections in detail, a brief review of the salient aspects of the invention may be helpful. Studies of snow/ice control procedures have shown that for these procedures to be effective, the pavement/ice bond must be broken. More recently, such studies have shown that where a liquid brine can be deposited on the pavement before the onset of inclement weather that pavement/ice bond is readily broken. Where the brine can be accurately deposited without over-splash and within mandated specification, a substantial savings in the cost of salt becomes achievable. Because the trucks carrying liquid brine are operating on superhighways with dry pavement, for safety reasons they are compelled to operate at prevalent highway speeds, for example, 60-65 miles per hour. The problem then addressed is how to deposit and accurately meter the specified amount of brine onto the pavement without losing it to splash and mist. Splash and mist are generated by truck turbulence and the generation of liquid splash due to the liquid falling upon a pavement at a speed differential. With the present invention, the liquid is ejected from a nozzle located a few inches above the pavement surface. The nozzles are further oriented such that their axes are substantially parallel with both the pavement surface and the forward velocity vector of the truck upon which they are mounted. Next, brine is ejected from the nozzle at a fixed number of gallons per lane mile and at a velocity which corresponds with the forward velocity of the truck. The result is something in the nature of a low plume which extends a few inches above the pavement; is stationary with respect to that surface and essentially falls straight down onto it under the influence of gravity. Thus deposited, the brine dries rather rapidly assuming it is not disturbed by oncoming vehicles. That is why the nozzles of the invention are positioned outside of the tire tracks of the truck carrying the brine. That positions the brine also outside the tire tracks of coincident traffic. Without the splash disruption of the deposited brine, oncoming traffic can pass the service truck on the left without danger. As noted in the declaration, the system at hand has been quite successful.

Following the brine deposition as the snow commences to fall, the now dry brine strip is reconstituted and the pavement/ice bond isn't permitted to occur.

Now turning to the rejection of record, it is noted that claims 7 and 10 have been rejected under § 112 of the Patent Statute, the Examiner indicating that the terms "said pump" lack antecedent basis. Amendments conforming to the Examiner's helpful suggestion have been inserted with this response.

It is noted that claims 1-6, 9, 11, 13, 15, 17-21, 30, 33 and 38-42 have been rejected under § 102 of the Patent Statute as being anticipated by Oligschlaeger, U. S. Patent No. 5,911, 363 (Oligschlaeger). In applying this rejection, the Examiner has indicated that Oligschlaeger discloses all featured elements of the invention specifically tank 1; variable streamer nozzle 21-24; pump 2; and control assembly 12.

Claim 1 readily distinguishes over Oligschlaeger. Note from the introductory paragraph that the claim is directed to depositing treatment liquid as a liquid quantity per unit of roadway length from a vehicle moving at a given forward velocity and direction. To provide an antecedent basis for later claims, note that the vehicle is described as having leftward and rightward pavement engaging wheels exhibiting wheel tracks spaced apart. The claim then calls for supporting a tank containing a source of liquid. Paragraph (b) provides at least one streamer nozzle having an input, a nozzle axis and an output with a nozzle effective diameter. The nozzle is described in connection with Fig. 10. Note that it is fixed and not variable. Paragraph (c) calls for mounting the streamer nozzle in an orientation where the nozzle output is rearwardly directed. Of importance, the nozzle axis extends substantially parallel with the roadway surface. Looking to Fig. 5 of the reference, note that nozzles 21-24 are not substantially parallel with the roadway pavement surface. Note additionally that paragraph (c) further describes that the nozzle axis is substantially parallel with the vehicle forward direction. Looking to Fig. 6 of the reference none of the nozzles meet that criteria. Next, the claim calls for positioning the nozzle in spaced adjacency with the pavement surface. Note nozzles 80, 81 and 82 in Fig. 3 of the application. By being close to the pavement surface 24 and because the nozzles are expressing brine at a rate corresponding with the forward velocity of the vehicle, what in effect occurs is a stream of brine which extends about three feet from the nozzle output just a few inches above the pavement surface and has no relative movement with respect to that pavement surface. Fig. 11 shows that movement with downwardly directed arrow array 484. In fact, it falls straight down and the idea is to minimize the length of time it takes to fall to the pavement. By contrast, again looking to Figs. 5 and 6 of the reference, nozzles 21-24 must be high enough to in effect, "reach" over the turbulence area x. Paragraph (d) provides a fluid transfer assembly which includes a drivable pump assembly, paragraph (e) calls for monitoring the forward velocity of the vehicle and, paragraph (f) again distinguishes over the reference by

calling out the driving of the pump assembly in correspondence with the monitored forward velocity and in correspondence with the nozzle effective diameter at a pump speed effective to express the liquid from the nozzle with a fluid flow velocity vector substantially parallel with the surface and which corresponds with the vehicle forward velocity. The reference, in effect, teaches against generation of a fluid flow velocity vector substantially parallel with the surface.

Claim 1 readily distinguishes and thus is not anticipated by Oligschlaeger. Federal Circuit decisions consistently emphasize that anticipation (lack of novelty) is established only if (1) all the elements of an invention, as stated in a patent claim, (2) are identically set forth, (3) in a single prior art reference. See generally Chism on Patents, Section 3.02 [1] [d].

Claim 2, dependent upon claim 1 recites that step (f) drives the pump assembly at a rate expressing from the streamer nozzle a volume of liquid corresponding with the quantity of liquid per unit roadway length. This feature is described in connection with Fig. 11 of the application. Oligschlaeger describes as at column 5 that the only requirement is to drive the pump at a rate which corresponds with the rate of forward movement of the vehicle. Enhanced step (f) is much more involved.

Claim 3, dependent upon claim 2 sets forth that step (b) provides the streamer nozzle as having a nozzle effective diameter corresponding with the pump assembly rate of expressing a volume of the liquid. The claim is looking to Fig. 11 and the derivation of the fixed diameter of the nozzle. The claim should be considered allowable for reasons given above in connection with claim 1.

Claim 4, dependent upon claim 2 describes that step (d) provides the fluid transfer assembly pump assembly having at least one fixed displacement pump. As before, the claim should be considered allowable for reasons given in connection with claim 1.

Claim 5, dependent upon claim 1 provides that step (c) mounts a streamer nozzle spaced leftwardly outwardly from the wheel tracks of the leftward wheel. Looking to Fig. 3, that is nozzle 80. Note that it is positioned leftwardly from wheel 30. Looking additionally to Fig. 12, by so spacing the nozzle 80 outwardly, the sprayed strip 510 is displaced from the wheel tracks not only of the vehicle 10 but also of approaching vehicular traffic. It should be borne in mind that claim 5 is associated with the nozzle mounting restrictions of claim 1. Thus, Oligschlaeger fails to disclose this limitation.

Claim 6, dependent upon claim 5 describes that step (c) mounts a nozzle between the wheel tracks as shown in Fig. 3. That is nozzle 81. Again, as seen in Fig. 12, that creates a strip of brine 511 which avoids the tire tracks 500 and 501 of oncoming traffic. Accordingly, the freshly deposited brine is not disturbed by oncoming traffic. In general, only two of the nozzles

will be used at a given time as illustrated in connection with Fig. 12. Typical governmental specifications require the deposition of 30 gallons of brine per mile per lane mile.

Claim 9, also dependent upon claim 1 provides that step (c) mounting a streamer nozzle spaced rightwardly outwardly from the wheel track of the rightward wheel. Returning to Fig. 3, that is nozzle 82. Note that it is outboard of the wheel assembly 32. Fig. 12 reveals the utilization of that nozzle as at 82′ such that a deposition is provided at the crown of a lane. When combined with the mounting limitations of claim 1, the claim readily distinguishes over Oligschlaeger.

Claim 11, dependent upon claim 9 provides for the mounting of a streamer nozzle generally between the wheel tracks of the rear wheels. That is nozzle 81 in Fig. 3. There is no such nozzle positioning in Oligschlaeger.

Claim 13, dependent upon claim 1 provides that step (c) mounts a nozzle in spaced adjacency with the pavement surface to generally encounter a surface effect avoiding vehicle induced air turbulence. That would be impossible with Oligschlaeger.

Claim 15, dependent upon claim 1 provides that step (c) mounts the streamer nozzle forwardly of the leftward and rightward pavement engaging wheels. This is a forward mounting shown in Fig. 2, for example, at 80′ and at 90′. There is no air turbulence phenomena behind these streamer nozzles and all nozzles in Oligschlaeger are at the rear of the vehicle.

Claim 17, dependent upon claim 1 describes that the vehicle is a trailer as illustrated in connection with Fig. 13. There is no trailer in Oligschlaeger.

Claim 18 is independent and contains recitation that clearly distinguish over the reference. The introductory paragraph of the claim provides antecedent structure similar to claim 1. Following recitation of a tank assembly a nozzle assembly is called for which includes a nozzle support extending in closely spaced adjacency with the roadway surface. Such spacing is not revealed in Fig. 5 of the reference. Recitation continues with providing for one or more streamer nozzles including a left streamer nozzle. Each of these nozzles is described as having an input, a nozzle axis and a nozzle effective diameter. The left streamer nozzle is described as being supported laterally from the left wheel track in spaced adjacency with the wheel surface. That is nozzle 80 shown in Fig. 3. Nozzles 21-24 of the reference are located between the wheel tracks. Note that the paragraph further describes that they are supported in a rearwardly directed orientation wherein the nozzle axis extends substantially parallel with both the roadway surface and the vehicle forward direction. There is no such nozzle orientation in the reference.

A motor assembly then is recited followed by the recitation of a first pump which is coupled in driven relationship with the motor assembly drive output and has a first pump input coupled in fluid flow transfer with the tank assembly and a first pump output coupled in fluid flow transfer relationship with the input of the left streamer nozzle. That is not the architecture of Oligschlaeger.

Next a control assembly is recited which is responsive to vehicle velocity to control the motor in correspondence with a target volume of liquid per unit length of pavement. That subject is not discussed in the reference. The paragraph further recites that motor assembly is controlled in correspondence with the output of the first pump as well as the effective diameter of the left streamer nozzle. This follows the discussion provided in connection with Fig. 11. This effects the expression of the liquid from the left streamer nozzle at a velocity having a vector generally parallel with the roadway surface which substantially corresponds with the vehicle velocity and at the target volume per unit length of pavement. With the instant response, the term "generally" has been inserted before the term parallel at line 30. Additionally, the claim is amended at line 16 to insert the term "closely" before the term spaced.

Claim 19, dependent upon claim 18 describes that the location of spaced adjacency of the nozzle is to generally encounter an airflow surface effect. There is no discussion of a surface effect or indication that it could possibly be employed in the Oligschlaeger patent.

Claim 20 describes that the first pump is a fixed displacement pump. The claim should be considered allowable for reasons given in connection with claim 18.

Claim 21, dependent upon claim 18 describes that the nozzle support locates the left streamer nozzle leftwardly outwardly from the left wheel track. Nozzles 21-24 of the reference are not so located.

Claim 30, dependent upon claim 18 looks to the mounting arrangement described in connection with Fig. 5. By so structuring the apparatus, roadway service trucks may be reconfigured somewhat readily in order to carry out other roadway services. Oligschlaeger does not address that subject.

Claim 33, dependent upon claim 18 again looks to the supporting of the nozzles forwardly of forward wheels as at 26 as shown in Fig. 2. This location is devoid of turbulence and is not suggested in Oligschlaeger.

Independent claim 38 looks to the nozzle array seen in Fig. 3 at 520a-520h. As described at page 24 of the detailed description, these nozzles may be activated in conjunction with valves 528 and 534. The introductory paragraph of the claim provides definition of a vehicle track width which is the width between the right and left wheel tracks. Following the

recitation of a tank assembly, a nozzle assembly is called for which includes a nozzle port extending in spaced adjacency with the roadway rearwardly of the wheels along the vehicle track width. Figs. 5 and 6 of the reference reveal that the nozzles 21-24 are located within the wheel tracks, not between them.

It further calls for a plurality of spaced apart rearwardly directed steamer nozzles each having an input, nozzle axis and a nozzle expective diameter.

It further provides that each streamer nozzle is supported by the nozzle support in closely spaced adjacency with the pavement surface in an orientation wherein the nozzle axis extends substantially parallel with the roadway surface and vehicle forward direction. The reference does not mount nozzle in that manner. Next, a motor assembly is called for and the pump assembly is recited with the first pump coupled in driven relationship with the motor assembly drive output having a first pump input coupled with the tank assembly and a first pump output. Next, a liquid distribution manifold is called for having a first liquid input coupled in fluid flow transfer communication with the first pump output and a plurality of output ports corresponding with the given number of nozzles.

A distribution conduit assembly was then called for and a control assembly is recited which is responsive to vehicle velocity to control the motor assembly in correspondence with a target volume of liquid per unit length of pavement, the output of the first pump and the sum of the effective diameters of given number of streamer nozzles. There is no such control in Oligschlaeger. This arrangement is described as effecting expression of liquid from the plurality of streamer nozzles at a velocity having a vector parallel with the roadway surface substantially corresponding with vehicle velocity and with a combined volume per unit length of pavement corresponding with the target volume. No such technical discussion is in the reference. These features are described commencing at line 26 on page 24 of the application. The claim has been amended to insert the term "closely" in the third paragraph.

Claim 39, dependent upon claim 38 recites that the first pump is a fixed displacement pump. The claim should be considered allowable for reasons given in connection with claim 38.

Claim 40, dependent upon claim 38 recites the spacing of the streamer nozzles in spaced adjacency with the roadway surface to generally encounter an airflow surface effect. That effect is nowhere described in the reference.

Claim 41, dependent upon claim 38 describes that the plurality of nozzles are supported by the nozzle of support in regularly spaced apart relationship. That is not shown in the reference.

Claim 42, dependent upon claim 38 recites that the liquid distribution manifold is supported by the nozzle support above the streamer nozzles. The claim should be considered allowable for reasons given in connection with claim 38.

It is noted that claims 14, 16, 32, 34 and 43 have been rejected under § 103 of the Patent Statute as being unpatentable over Oligschlaeger.

Claim 14, dependent upon claim 1 recites that the streamer nozzle is mounted about 2 inches to about 6 inches above the pavement surface. As set forth in the attached declaration, there is no suggestion whatsoever in Oligschlaeger that such positioning is important. As set forth in the declaration, by positioning nozzles at that close adjacency location, the time required for gravitational drop of the liquid to the pavement surface is substantially diminished, a very important aspect of the invention. The attached declaration also describes a video tape wherein a brine depositing system strikingly similar to that shown in the reference was evaluated by the City of Columbus Ohio in the winter of 2004. Following the demonstration wherein the system essentially failed, the city declined to keep the brining system for the remainder of that winter season. The corresponding DVD disc proffered as Exhibit 1 illustrates this failure, the deposition from time to time occluding vision through the windshield of the chase car even at about a 100 foot distance of separation. The DVD disc will reveal that the nozzles were located as shown in Fig. 5, presumably a design choice which demonstratively failed. Also on the disc is a conventional brine deposition assembly and a chase care derived imaging of the approach of the instant invention. The difference between the reference and conventional systems and the present system is quite dramatic.

With respect to claims 16 and 43, the Examiner has commented that the angle of the streamer nozzle is capable of being canted downwardly and the claim range would perform equally as well. The very slight cant described in these claims followed experimentation and normally would not be expected to be beneficial. But it is!

With respect to claim 32, there is no suggestion in the reference for using a trailer. The advantages of using a trailer are somewhat similar to the advantages of demountability described in connection with Fig. 5. Oligschlaeger certainly does not suggest use of a trailer.

With respect to claim 34, the Examiner indicates it is well known in the snow/ice treatment art to provide plows. That's true but it not obvious to use the plow as a wind baffle in conjunction with forwardly disposed nozzles. It should be kept in mind that for brine deposition, the truck is driving on dry pavement, i.e., before the plow would be used. As described at page 25 of the application from commencing at line 5, by mounting the nozzle array at the front of the

truck behind a baffle, essentially no air turbulence is involved, air turbulence with respect to moving trucks extending rearwardly of them.

Applicant notes with appreciation the indication that claims 7, 8, 10, 12, 22-29, 21, 35-37 and 44 are considered allowable.

It is noted that Steffen, U.S. Patent No. 4,052,003; Hedegaard, U.S. Patent No. 6,454,183; and Oosterman, U.S. Patent No. 6,479,128 have been cited but not applied in the rejection of the claims. Apparently, the Examiner has recognized that these references, taken singularly or in combination fail to militate against the patentability of the invention as claimed.

Amendments have been made to the specification. At page 5, lines 32 and 33, an application for United States patent is now described as an issued United States Patent.

At page 14, line 26, the term "additionally" has been deleted.

On January 23rd, Attorney for the Applicant, G. L. Smith, telephoned Examiner Steven J. Ganey and indicated that he had a DVD disc with about three minutes of program which illustrated a chase car video tape demonstration of a conventional governmental brining system followed by a remarkably similar if not identical brine deposition system of the principal reference Oligschlaeger, U. S. Patent No. 5,911,363 and finally followed by a chase car based imaging of a brine deposition truck configured in accordance with the teachings of the instant application.

The telephone discussion principally involved a determination as to whether Examiner Ganey had a capability for playing the DVD disc. This was answered in the affirmative. The Examiner and the Applicant's Attorney then discussed a possibility for having the disc hand-delivered to avoid it being lost in a mail room. No determination was made in that regard. Accordingly, the disc is enclosed herewith as an exhibit. / In the event that it doesn't show up, the Examiner is invited to telephone Applicant's Attorney and a replacement disc will be delivered to him.

In view of the foregoing remarks wherein the invention as claimed is shown to readily distinguish over the art of record, issuance of a Notice of Allowance earnestly is solicited.

Respectfully submitted,

Date: 21 Feb 06

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Encl – Declaration
DVD disc as Exhibit 1

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited on February 21, 2006 with the United States Postal Service as first class mail in an envelope addressed to:

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Jane Keeney